

1. Which of the following intervals describes the Domain of the function below?

$$f(x) = -\log_2(x - 4) + 8$$

- A.  $(-\infty, a), a \in [-6.3, -2.6]$
  - B.  $[a, \infty), a \in [7.5, 9.8]$
  - C.  $(a, \infty), a \in [3.4, 4.8]$
  - D.  $(-\infty, a], a \in [-10.6, -4.1]$
  - E.  $(-\infty, \infty)$
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2. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$\log_5(-3x + 8) + 6 = 2$$

- A.  $x \in [337.67, 342.67]$
  - B.  $x \in [-0.33, 5.67]$
  - C.  $x \in [339, 345]$
  - D.  $x \in [-7.67, 1.33]$
  - E. There is no Real solution to the equation.
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3. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x - 8) - 7$$

- A.  $[a, \infty), a \in [7.79, 8.59]$
  - B.  $(-\infty, a), a \in [-7.01, -6.36]$
  - C.  $(-\infty, a), a \in [6.35, 7.09]$
  - D.  $[a, \infty), a \in [-8.1, -7.6]$
  - E.  $(-\infty, \infty)$
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4. Solve the equation for  $x$  and choose the interval that contains  $x$  (if it exists).

$$13 = \sqrt[3]{\frac{9}{e^{8x}}}$$

- A.  $x \in [0.55, 0.71]$
  - B.  $x \in [-5.7, -4.98]$
  - C.  $x \in [-0.38, -0.29]$
  - D. There is no Real solution to the equation.
  - E. None of the above.
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5. Solve the equation for  $x$  and choose the interval that contains  $x$  (if it exists).

$$19 = \sqrt[5]{\frac{15}{e^{4x}}}$$

- A.  $x \in [2, 7]$
  - B.  $x \in [-1.8, 0.2]$
  - C.  $x \in [-24.43, -21.43]$
  - D. There is no Real solution to the equation.
  - E. None of the above.
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6. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x+8} - 6$$

- A.  $[a, \infty), a \in [-6, -2]$
- B.  $(a, \infty), a \in [-6, -2]$
- C.  $(-\infty, a], a \in [5, 14]$
- D.  $(-\infty, a), a \in [5, 14]$
- E.  $(-\infty, \infty)$

7. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$3^{4x+4} = \left(\frac{1}{125}\right)^{2x-3}$$

- A.  $x \in [-0.28, 3.72]$
  - B.  $x \in [-3.5, -0.5]$
  - C.  $x \in [-1.5, 0.5]$
  - D.  $x \in [1.05, 6.05]$
  - E. There is no Real solution to the equation.
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8. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$\log_5(3x + 5) + 5 = 2$$

- A.  $x \in [4.6, 9.2]$
  - B.  $x \in [-86, -82]$
  - C.  $x \in [-3.8, -0.7]$
  - D.  $x \in [-80.1, -77.2]$
  - E. There is no Real solution to the equation.
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9. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$2^{3x-3} = 25^{2x-4}$$

- A.  $x \in [2.1, 4.7]$
- B.  $x \in [-0.8, 2.1]$
- C.  $x \in [-2.3, 0]$
- D.  $x \in [-13.4, -9.8]$
- E. There is no Real solution to the equation.

10. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-9} - 1$$

- A.  $[a, \infty), a \in [-1.7, 0.7]$
  - B.  $(-\infty, a], a \in [0.1, 2.5]$
  - C.  $(-\infty, a), a \in [0.1, 2.5]$
  - D.  $(a, \infty), a \in [-1.7, 0.7]$
  - E.  $(-\infty, \infty)$
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11. Which of the following intervals describes the Range of the function below?

$$f(x) = \log_2(x - 7) - 1$$

- A.  $[a, \infty), a \in [-9, -6.1]$
  - B.  $(-\infty, a), a \in [0.9, 2.4]$
  - C.  $(-\infty, a), a \in [-2.7, 0.2]$
  - D.  $[a, \infty), a \in [6.8, 8.3]$
  - E.  $(-\infty, \infty)$
- 

12. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$\log_5(4x + 8) + 6 = 2$$

- A.  $x \in [-258, -255]$
- B.  $x \in [-256, -253]$
- C.  $x \in [-5, 1]$
- D.  $x \in [3.25, 10.25]$
- E. There is no Real solution to the equation.

13. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x - 1) - 1$$

- A.  $(-\infty, a), a \in [0.6, 3]$
  - B.  $[a, \infty), a \in [0.6, 3]$
  - C.  $(-\infty, a), a \in [-1.1, 0.8]$
  - D.  $[a, \infty), a \in [-1.1, 0.8]$
  - E.  $(-\infty, \infty)$
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14. Solve the equation for  $x$  and choose the interval that contains  $x$  (if it exists).

$$16 = \ln \sqrt[5]{\frac{20}{e^{3x}}}$$

- A.  $x \in [-11.67, -5.67]$
  - B.  $x \in [23.67, 26.67]$
  - C.  $x \in [-9.62, -3.62]$
  - D. There is no Real solution to the equation.
  - E. None of the above.
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15. Solve the equation for  $x$  and choose the interval that contains  $x$  (if it exists).

$$10 = \sqrt[7]{\frac{24}{e^{5x}}}$$

- A.  $x \in [-1.29, 0.71]$
- B.  $x \in [-4.59, -0.59]$
- C.  $x \in [-18.64, -9.64]$
- D. There is no Real solution to the equation.

E. None of the above.

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16. Which of the following intervals describes the Range of the function below?

$$f(x) = -e^{x-8} + 7$$

- A.  $[a, \infty), a \in [-7, -4]$
  - B.  $(-\infty, a], a \in [5, 8]$
  - C.  $(a, \infty), a \in [-7, -4]$
  - D.  $(-\infty, a), a \in [5, 8]$
  - E.  $(-\infty, \infty)$
- 

17. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$4^{4x+4} = 125^{3x-4}$$

- A.  $x \in [2.4, 4.3]$
  - B.  $x \in [-25, -24.8]$
  - C.  $x \in [-9.6, -7.9]$
  - D.  $x \in [0.8, 1]$
  - E. There is no Real solution to the equation.
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18. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$\log_2(-3x + 8) + 4 = 2$$

- A.  $x \in [1.33, 2.33]$
- B.  $x \in [-7, -2]$
- C.  $x \in [1.58, 7.58]$
- D.  $x \in [1.33, 2.33]$

E. There is no Real solution to the equation.

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19. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$2^{-4x-2} = \left(\frac{1}{9}\right)^{-2x+4}$$

- A.  $x \in [-5, -2]$
  - B.  $x \in [1.7, 4.7]$
  - C.  $x \in [1.03, 3.03]$
  - D.  $x \in [-1.84, 0.16]$
  - E. There is no Real solution to the equation.
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20. Which of the following intervals describes the Range of the function below?

$$f(x) = -e^{x-3} + 9$$

- A.  $[a, \infty), a \in [-10, -7]$
  - B.  $(-\infty, a], a \in [9, 12]$
  - C.  $(-\infty, a), a \in [9, 12]$
  - D.  $(a, \infty), a \in [-10, -7]$
  - E.  $(-\infty, \infty)$
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21. Which of the following intervals describes the Range of the function below?

$$f(x) = \log_2(x + 8) + 3$$

- A.  $[a, \infty), a \in [7, 12]$
- B.  $(-\infty, a], a \in [3, 4]$
- C.  $(-\infty, a), a \in [-4, -1]$
- D.  $[a, \infty), a \in [-8, -7]$

E.  $(-\infty, \infty)$

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22. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$\log_4(-4x + 8) + 6 = 2$$

- A.  $x \in [-64, -59.3]$
  - B.  $x \in [-4.1, -1]$
  - C.  $x \in [0.9, 2.5]$
  - D.  $x \in [-67.4, -64.9]$
  - E. There is no Real solution to the equation.
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23. Which of the following intervals describes the Range of the function below?

$$f(x) = \log_2(x + 8) - 7$$

- A.  $(-\infty, a), a \in [6.71, 7.57]$
  - B.  $[a, \infty), a \in [-8.19, -7.94]$
  - C.  $[a, \infty), a \in [7.56, 8.94]$
  - D.  $(-\infty, a), a \in [-7.46, -6.31]$
  - E.  $(-\infty, \infty)$
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24. Solve the equation for  $x$  and choose the interval that contains  $x$  (if it exists).

$$7 = \sqrt[5]{\frac{20}{e^{4x}}}$$

- A.  $x \in [-11.6, -7]$
- B.  $x \in [1.6, 1.8]$
- C.  $x \in [-0.6, 0.6]$
- D. There is no Real solution to the equation.



E. None of the above.

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25. Solve the equation for  $x$  and choose the interval that contains  $x$  (if it exists).

$$10 = \sqrt[6]{\frac{27}{e^{6x}}}$$

- A.  $x \in [-3.75, -0.75]$   
B.  $x \in [-10.55, -7.55]$   
C.  $x \in [-0.22, 1.78]$   
D. There is no Real solution to the equation.  
E. None of the above.
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26. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-1} + 2$$

- A.  $(a, \infty), a \in [2, 5]$   
B.  $(-\infty, a], a \in [-2, 1]$   
C.  $(-\infty, a), a \in [-2, 1]$   
D.  $[a, \infty), a \in [2, 5]$   
E.  $(-\infty, \infty)$
- 

27. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$5^{4x+5} = \left(\frac{1}{49}\right)^{-2x-4}$$

- A.  $x \in [-2.6, 0.5]$   
B.  $x \in [-6.5, -4.1]$   
C.  $x \in [-0.9, 1.6]$

D.  $x \in [6.2, 7]$

E. There is no Real solution to the equation.

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28. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$\log_4(-3x + 8) + 5 = 3$$

A.  $x \in [-7.67, 1.33]$

B.  $x \in [-19.67, -10.67]$

C.  $x \in [-11, -7]$

D.  $x \in [0.65, 5.65]$

E. There is no Real solution to the equation.

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29. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$4^{-5x-3} = \left(\frac{1}{125}\right)^{2x-5}$$

A.  $x \in [9.7, 10.5]$

B.  $x \in [-0.4, 2.1]$

C.  $x \in [-1.1, -0.5]$

D.  $x \in [-4.9, -2.9]$

E. There is no Real solution to the equation.

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30. Which of the following intervals describes the Domain of the function below?

$$f(x) = -e^{x+6} - 7$$

A.  $(-\infty, a), a \in [-8, 3]$

B.  $[a, \infty), a \in [2, 10]$

C.  $(-\infty, a], a \in [-8, 3]$

D.  $(a, \infty), a \in [2, 10]$

E.  $(-\infty, \infty)$

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